

5 I CLAIM:

1. A polymerizable resin material comprising: a monomer comprised of bisphenol A ethoxylate (1 to 4) dimethacrylate, about 70 to about 90%, by weight; and benzylmethacrylate, about 10 to about 20%, by weight; and, optionally, one or more stabilizing monomers,  
10 which polymerizable resin material, when exposed to heat or visible and/or UV light for a suitable period of time, is cured.

2. The polymerizable resin material of claim 1, wherein the stabilizing monomer comprises at least one of trimethylolpropane  
15 trimethacrylate, about 1 to about 10%, by weight; isobornyl methacrylate, about 1 to about 10%, by weight; ethoxylate nonyl phenol acrylate, about 1 to about 10%, by weight; ethoxylate monyl phenol, about 1 to about 10%, by weight; and/or 2-phenoxyethyl methacrylate esters, about 1 to about 10%, by weight.

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3. The polymerizable resin material of claim 1, further comprising at least one photochromatic dye.

4. The polymerizable resin material of claim 1, further  
25 comprising at least one photoinitiator material.

5. The polymerizable resin material of claim 1, further comprising at least one dye stabilizer material.

6. The polymerizable resin material of claim 1, further comprising at least one UV stabilizer material.

7. The polymerizable resin material of claim 1, wherein the resin material is exposed to light in the range of about 368 to about 580 nm.

8. The polymerizable resin material of claim 7, wherein the resin material is cured for a period of time of about two and a half minutes or less.

9. The polymerizable resin material of claim 1 comprising: the lens composition for forming photochromatic lens comprises bisphenol A ethoxylate (1 to 4) dimethacrylate, about 70 to 90%, by weight; benzylmethacrylate, about 10 to about 20%, by weight, and one or more of the following stabilizing monomers selected from the group of: trimethylolpropane trimethacrylate, about 1 to about 20%, by weight; isobornyl methacrylate, about 1 to about 20%, by weight; ethoxylate nonylphenol, about 1 to about 20%, by weight; 2-phenoxyethyl methacrylate-esters, about 1 to about 20%, by weight; ethoxylate nonyl phenol acrylate, about 1 to about 20%, by weight; optionally one or more photochromatic dyes, about .001 to about .0001%, by weight; optionally one or more UV stabilizers, about 1 to about .1%, by weight; optionally one or more dye stabilizers, about .1 to .00001%, by weight; optionally one or more silane materials, about 1 to 5%, by weight; and, optionally, one or more photoinitiators, about 1 to about 5%, by weight.

10. The polymerizable resin material of claim 9, comprising: bisphenol A ethoxylate (1 to 4) dimethacrylate, about 85.7%, by weight; benzylmethacrylate, about 8.58%, by weight; trimethylolpropane

trimethacrylate, about 2.6%, by weight; UV stabilizer, about .19%, by weight; Chromtech Blue 475, about .004%, by weight; Chromtech PH 20, about .0096%, by weight; Chromtech PH 8, about .00096%, by weight; silane, about 2.9%, by weight; and photoinitiator, about .18%, by weight.

11. The polymerizable resin material of claim 9, comprising: bisphenol A ethoxylate (1 to 4) dimethacrylate, about 85.7%, by weight; benzylmethacrylate, about 8.58%, by weight; trimethylolpropane trimethacrylate, about 2.6%, by weight; UV stabilizer, about .19%, by weight; Chromtech Orange PH-2458, about .004%, by weight; Chromtech PH 20, about .0096%, by weight; Chromtech PH 8, about .00096%, by weight; silane, about 2.9%, by weight; and UV stabilizer, about .18%, by weight.

12. The polymerizable resin material of claim 9, comprising: bisphenol A ethoxylate (1 to 4) dimethacrylate, about 85.7%, by weight; benzylmethacrylate, about 8.58%, by weight; ethoxylate nonylphenol, about 2.6%, by weight; UV stabilizer, about .19%, by weight; Chromtech Purple 293, about .004%, by weight; Chromtech PH 20, about .0096%, by weight; Chromtech PH 8, about .00096%, by weight; silane, about 2.9%, by weight; and photoinitiator, about .18%, by weight.

13. The polymerizable resin material of claim 9, comprising: bisphenol A ethoxylate (1 to 4) dimethacrylate, about 85.7%, by weight; benzylmethacrylate, about 8.58%, by weight; ethoxylate nonylphenol, about 12.6%, by weight; UV stabilizer, about .19%, by weight; Chromtech Yellow 339, about .004%, by weight; Chromtech PH 20, about .0096%, by weight; Chromtech PH 8, about .00096%, by weight;

silane, about 2.9%, by weight; and photoinitiator, about .18%, by weight.

14. The polymerizable resin material of claim 9, comprising:
- 5 bisphenol A ethoxylate (1 to 4) dimethacrylate, about 85.7%, by weight; benzylmethacrylate, about 8.58%, by weight; UV stabilizer, about .19%, by weight; Chromtech Green 572, about .002%, by weight; Chromtech Blue 475, about .002%, by weight; Chromtech PH 20, about .0096%, by weight; Chromtech PH 8, about .00096%, by weight; silane, about
- 10 2.9%, by weight; and photoinitiator, about .36%, by weight.

15. A method for making a plastic lens comprising
- providing a front mold having a reflective, non-visible and non-ultraviolet (UV) absorptive inner surface;
- 15 providing a back mold which is light transmissive;
- disposing the front mold and the back mold in a light transparent gasket, the gasket defining a lower inner edge for removably sealing the front mold to the gasket, the gasket further defining an upper inner edge for holding the back mold in a spaced apart relationship to the
- 20 lower inner edge, the space between the upper and lower inner edges defining a lens forming cavity when the front mold and the back mold are positioned in the gasket;
- the lower inner edge of the gasket extending in a radially inward direction around an inner surface of the gasket, the lower
- 25 inner edge having an upper surface which is in a spaced apart relationship to the upper inner edge wherein the front mold is removably sealed within and is held in position in the gasket by the lower inner edge;
- dispensing a predetermined quantity of a curable lens
- 30 forming nonphotoinitiating resin material in the lens forming cavity, the

resin material comprising bisphenol A ethoxylate (1 to 4) dimethacrylate, about 70 to about 90%, by weight; and benzylmethacrylate, about 10 to about 20%, by weight; and, optionally, one or more stabilizing monomers; which resin material cures when exposed to heat or visible

5 and/or UV light; and,

exposing the dispensed resin material in the lens forming cavity to a source of heat visible and/or UV light for a predetermined length of time at a predetermined intensity to cure the resin material without the need for cooling the resin material.

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16. The method of claim 15, in which the stabilizing monomers are selected from the group of: trimethylolpropane trimethacrylate, about 1 to about 10%, by weight; isobornyl methacrylate, about 1 to about 10%, by weight; ethoxylate nonyl phenol acrylate, about 1 to about 10%, by weight; ethoxylate nonyl phenol, about 1 to about 10%, by weight; and/or 2-phenoxyethyl methacrylate esters, about 1 to about 10%, by weight.

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17. The method of claim 15, in which the resin material is exposed to light in the range of about 368 to about 580 nm.

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18. The method of claim 17, in which the resin material is cured for a period of time of about two and a half minutes or less.

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19. The method of claim 15, in which the light passes through a diffusion member before the light passes through and cures the lens forming resin material.

20. The method of claim 19, in which the resin material in the lens forming cavity is rotated about an axis extending perpendicular to the plane of the lens during the curing of the lens forming resin material.

5 21. The method of claim 15, in which the front mold comprises a nickel material coated with a hard carbon surface.

22. The method of claim 15, in which the back mold comprises a transparent glass material.

10 23. The method of claim 15, in which the lens forming resin material is exposed to heat or visible and/or UV light for a period of two and a half minutes or less.

15 24. The method of claim 15, in which the gasket is removed, exposing the edge of the cured lens material and a force is applied at least a portion of an edge of the front and/or back molds to remove the lens from the front and back molds.

20 25. The method of claim 15, in which the resin material further comprises at least one photochromatic dye material.

26. The method of claim 15, in which the resin material further comprises at least one photoinitiator material.

25 27. The method of claim 15, in which the resin material further comprises at least one UV stabilizer material.

30 28. The method of claim 15, in which the resin material further comprises at least one dye stabilizer material.

29. The method of claim 15, in which the resin material comprises the lens composition for forming photochromatic lens comprises bisphenol A ethoxylate (1 to 4) dimethacrylate, about 70 to 90%, by weight; benzylmethacrylate, about 10 to about 20%, by weight, and one or more of the following stabilizing monomers selected from the group of: trimethylolpropane trimethacrylate, about 1 to about 20%, by weight; isobornyl methacrylate, about 1 to about 20%, by weight; ethoxylate nonylphenol, about 1 to about 20%, by weight; 2-phenoxyethyl methacrylate-esters, about 1 to about 20%, by weight; ethoxylate nonyl phenol acrylate, about 1 to about 20%, by weight; optionally, one or more photochromatic dyes, about .001 to about .0001%, by weight; optionally, one or more UV stabilizers, about 1 to about .1%, by weight; optionally, one or more dye stabilizers, about .1 to .00001%, by weight; optionally, one or more silane materials, about 1 to 5%, by weight; and optionally, one or more photoinitiators, about 1 to about 5%, by weight.

30. The method of claim 15, in which the resin material comprises: bisphenol A ethoxylate (1 to 4) dimethacrylate, about 85.7%, by weight; benzylmethacrylate, about 8.58%, by weight; trimethylolpropane trimethacrylate, about 2.6%, by weight; UV stabilizer, about .19%, by weight; Chromtech Blue 475, about .004%, by weight; Chromtech PH 20, about .0096%, by weight; Chromtech PH 8, about .00096%, by weight; silane, about 2.9%, by weight; and photoinitiator, about .18%, by weight.

31. The method of claim 15, in which the resin material comprises: bisphenol A ethoxylate (1 to 4) dimethacrylate, about 85.7%, by weight; benzylmethacrylate, about 8.58%, by weight; trimethylolpropane trimethacrylate, about 2.6%, by weight; UV stabilizer,

about .19%, by weight; Chromtech Orange PH-2458, about .004%, by weight; Chromtech PH 20, about .0096%, by weight; Chromtech PH 8, about .00096%, by weight; silane, about 2.9%, by weight; and UV stabilizer, about .18%, by weight.

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32. The method of claim 15, in which the resin material comprises: bisphenol A ethoxylate (1 to 4) dimethacrylate, about 85.7%, by weight; benzylmethacrylate, about 8.58%, by weight; ethoxylate nonylphenol, about 2.6%, by weight; UV stabilizer, about .19%, by weight; Chromtech Purple 293, about .004%, by weight; Chromtech PH 20, about .0096%, by weight; Chromtech PH 8, about .00096%, by weight; silane, about 2.9%, by weight; and photoinitiator, about .18%, by weight.

33. The method of claim 14, in which the resin material comprises: bisphenol A ethoxylate (1 to 4) dimethacrylate, about 85.7%, by weight; benzylmethacrylate, about 8.58%, by weight; ethoxylate nonylphenol, about 12.6%, by weight; UV stabilizer, about .19%, by weight; Chromtech Yellow 339, about .004%, by weight; Chromtech PH 20, about .0096%, by weight; Chromtech PH 8, about .00096%, by weight; silane, about 2.9%, by weight; and photoinitiator, about .18%, by weight.

34. The method of claim 14, in which the resin material comprises: bisphenol A ethoxylate (1 to 4) dimethacrylate, about 85.7%, by weight; benzylmethacrylate, about 8.58%, by weight; UV stabilizer, about .19%, by weight; Chromtech Green 572, about .002%, by weight; Chromtech Blue 475, about .002%, by weight; Chromtech PH 20, about .0096%, by weight; Chromtech PH 8, about .00096%, by



weight; silane, about 2.9%, by weight; and photoinitiator, about .36%, by weight.

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